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ABSTRACT

Intelligence is one component of self esteem, but it is not well represented in standard measures. To further research on intelligence and self esteem, adolescent attitude toward intelligent behavior in school were measured. To measure students' opinions, an instrument referred to as "Thoughts on Thinking" was developed. This thirty statement, ten-point scale was administered to 699 students in grades 5 through 12 in a small suburban school district. There were 84 students who identified themselves as having participated in the district gifted program while 615 did not so identify themselves. Three factors were found to be present: factor I: "Smartness Self-Esteem"; factor II: "Smartness Preference"; and factor III: "Smartness Self-Concept." Significance for grade level and gifted ability on factor I; for grade level and gender on factor II; and for gender and gifted ability on factor III were found. On factor I, fifth graders were found to be significantly more confident that they were smart than were other grade levels. The same finding held true for those identified as gifted versus those not identified as gifted. On factor II, males more strongly preferred athletics/popularity to intelligence than did females. On factor III, the "identified gifted" had significantly less concern than those students not identified as gifted. Generally, attitudes toward intelligence were found to be extremely stable in fifth through twelfth grades. (Author/MKA)

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School Smarts: Measuring Adolescent Attitude Toward Intelligent Behavior in School

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ABSTRACT

This study attempted to define adolescent attitude toward intelligent behavior in school using an instrument referred to as "Thoughts on Thinking." This thirty statement Likert-type ten point response scale was administered to 699 students in grades five through twelve in a small suburban school district. There were 84 students who identified themselves as having participated in the district gifted program while 615 did not so identify. There were a total of 355 males and 344 females in the study.

The students responded to thirty statements by using a Likert scale ranging from one (strongly disagree) to ten (strongly agree) to assess their attitudes toward "School Smarts." The statement intercorrelations were assessed for psychometric sampling adequacy and then factored using a principal components analysis. Using a root curve, three factors were determined and transformed to an oblique reference structure solution: Factor I: *Smartness Self-Esteem* which was defined by statements relating to intellectual self-esteem; Factor II: *Smartness Preference* which was defined by statements relating to preference for athletics or popularity in relation to intelligence; and Factor III: *Smartness Self-Concept* which was defined by statements relating to concerns about being intelligent.

When interactions were considered between the three independent variables of gender, grade, and gifted ability on the three dependent variables of Factors I, II, and III, MANOVA determined that there were no multivariate interactions and hence, no univariate interactions. ANOVAs found significance ($p<.05$) for grade level and gifted ability on Factor I: *Smartness Self-Esteem;* for grade level and gender on Factor II: Smartness Preference; and for gender and gifted ability on Factor III: *Smartness Self-Concept.* On Factor I, fifth grade was found to be significantly more confident that they were smart than were other grade levels, as were the identified gifted versus those not identified as gifted. On Factor II, males more strongly preferred athletics/popularity to intelligence than did females, with the ninth grade significantly ($p<.05$) higher in that preference, and the fifth grade significantly ($p<.05$) lower than the other grade levels. On Factor III, females had significantly ($p<.05$) more concern than the males about their intellectual ability, while the identified gifted had significantly ($p<.05$) less concern than those students not identified as gifted. Generally, attitude toward intelligence was found to be extremely stable in fifth through twelfth grades.

This paper was presented at the Annual Meeting of The American Educational Research Association, San Diego, California, 1998.

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School Smarts: Measuring Adolescent Attitude Toward Intelligent Behavior in School

Theoretical Framework

Intelligence is one component of self-esteem, but according to Domino & Blumberg (1986), the cognitive is not well represented in standard measures. The instrument, "Thoughts on Thinking," was developed to address intelligence not only as a component of self esteem, but also as it relates to self-concept, or adolescent perception of how others view their intelligence. Generally, the individual's perception of self is quite stable (Beane, Libpka, & Ludewig, 1980). However, the self-esteem and self-concept are most vulnerable and most easily influenced when the social comparison group becomes larger, which traditionally has occurred as students moved from smaller elementaries into the larger world of junior high school (Wigfield, Eccles, MacIver, Reuman, & Midglely, 1991).

During this period of transition, students experiencing low self-esteem feel less able to control their own self perceptions and more open to change than ever before. The junior high comparison group is the largest and, therefore, the most divergent the adolescent has ever encountered. This occurs at a time when, according to Beane, Lipka, and Ludewig (1980), the adolescent sees peers as significant others and tends to make judgments about self-perceptions on a norm-referenced basis. Festinger (1954) suggests that when one is exposed to divergent opinions, there is a tendency to change one's own opinion, and this is apparent during the highly unstable junior high years. He also suggests that when there is a given opportunity to compare, it will have a considerable impact on the self-evaluation of an individual. Again, this impact is most evident during these transitional years.

The process of social comparison according to Festinger (1954) is that of confirming or disconfirming one's own opinions within the social comparison group which leads to either higher or lower self-esteem. Because people are attracted to those of similar opinions and abilities and unattracted to those with dissimilar opinions and abilities, cliques or groups form related to those perceived similarities and abilities. It is within this intellectual context that those with high abilities or the "smart" are valued or de-valued by those of similar or dissimilar intellectual abilities; it is upon this basis that values and opinions are formed about being "smart." The attitude of the social comparison group toward intellectual attributes can determine whether the high achieving student is happy or unhappy with that particular attribute or role.

Objectives

The major objective of this study was to develop an instrument that would measure adolescent attitude toward intelligence. In order to develop evidence of the instrument's construct validity, group differences, internal consistency, and factor structure were examined. Cross, Coleman & Yonkers (1991) reported that students' perceptions of their abilities were more closely aligned with that of their peers than that of their teachers. Therefore, measurement of student attitude toward intelligence must take into account not only the individual's perception of ability, but also how peers as well as adults perceive the individual's ability.

Another important consideration is that not all individuals value intelligence equally. Whitfield, Cort, Fallone and Baluch (1993) found that of those surveyed in Britain, 24% of women wished to be remembered as "brilliant," 70% as most popular, and 6% as athletic, thereby suggesting differences within gender in attitudes toward athletics, among other issues.

Sadker & Sadker (1982) found that females tend to hide their intelligence in order to blend in, while Luftig & Nichols (1990) found that the gifted girl is the least popular member of the fifth through eighth grade classroom. Luftig & Nichols (1990) also found that the gifted male, however, was the most popular member of that same classroom. Both studies suggest that intelligence perceptions and gender differences are inextricably intertwined.

Group differences expected and found in this study included gender, grade level, and identified gifted versus students not identified gifted.

Methodology & Results

INSTRUMENTATION

"Thoughts on Thinking," a thirty statement instrument using a ten point Likert-type scale was developed to measure adolescent attitude toward intelligence. The instrument has been validated extensively (Nichols,1995; Nichols, 1997) and has strong internal consistency reliability. As used in this study, the instrument also solicits five demographic responses from those responding. The ten-point Likert scale ranging from one to ten, with one being strongly disagree and ten being strongly agree was used with this instrument. Each statement and its theoretical basis appears in Appendix A, as well as the factor loading for each variable which appears in Appendix B. Construct validity was established in an earlier study using seventh and tenth graders (Nichols, 1995; Nichols, 1997). Scale scores were determined as the average statement response within a scale. The independent variables within this study included ability grouping (students identified gifted versus

students not identified gifted), gender, and grade level (five through twelve). Grade level was considered a gross measure of age, socialization and physical development.

SAMPLE

Six hundred ninety-nine students in grades five through twelve from a suburban school district were the subjects of this study. These subjects consisted of 355 males and 344 females who were surveyed in math, English and government classes. Students identified themselves as having participated in the district's gifted program. These gifted students were identified upon admittance to that program through the use of standardized mental ability tests and achievement tests. Eighty-four of the students identified themselves as gifted. This district had an established gifted program for second through twelfth grade.

FACTOR ANALYSIS RESULTS

The thirty statements on the instrument "Thoughts on Thinking" were intercorrelated based on the responses of 699 students. The statements were assessed for psychometric sampling adequacy to determine if the defined correlations were appropriate for a factor analysis to be carried out. The total matrix sampling adequacy of the statements was .857 suggesting that the statement intercorrelations were acceptable for factoring. All statements had sampling adequacy greater than the minimal level of .50 (Feldman, Gagon, Hofmann & Simpson, 1987; Kaiser, 1970). Since three factors had been defined by previous analyses (Nichols, 1995), the present analysis extracted three factors by using a principal components analysis, with the three factors accounting for 46 percent of the total variance. After transformation the first factor accounted for 22 percent of the variance, the second factor accounted for 10 percent of the variance, and the third factor accounted for 14 percent of the total variance. This suggests that the first factor is the most important factor accounting for the same amount of total variance as the second and third combined. The second and third factor are equally important accounting for similar percentages of the total variance. The factors were transformed to an oblique reference structure solution using an orthotran/varimax transformation (Hofmann, 1978). Coefficient Alpha was used to establish the internal consistency of each subscale. A Coefficient Alpha of .70 was "deemed" necessary as a minimally acceptable coefficient. In the discussion to follow, each factor is discussed with regard to the variables defining it. A definitive factor loading was any loading greater than .40.

Factor I: *Smartness Self-Esteem* was defined by ten statements showing a strong internal consistency reliability with a coefficient alpha of .85. This factor dealt with aspects of the intellectual self-esteem, i.e., how students felt about their own intelligence. Sample

statements which correlated strongly with this factor included: I am smart, I think I will be successful because I am smart, Teachers think I am smart, and I enjoy being with smart people.

Factor II: *Smartness Preference* was defined by eight statements showing a strong internal consistency reliability with a coefficient alpha of .82. This factor consisted of eight statements relating to whether students valued athletics or popularity over intelligence or vice versa Sample statements which correlated strongly with this factor included: I am more concerned about my athletic ability than my thinking ability. I would rather be thought of as a good athlete than smart, I would rather be thought of as popular than smart.

Factor III: *Smartness Self-Concept* was defined by seven statements showing a strong internal consistency reliability with a coefficient alpha of .76. This factor consisted of seven statements relating to how students perceived their own intelligence in relation to others. Sample statements which correlated strongly with this factor included: I often wish I were smarter, Sometimes I feel frustrated because I wish I were smarter, I often feel I am not as smart as my friends, I am very concerned about what others think of my thinking ability.

Factor Intercorrelations

Factor I: *Smartness Self-Esteem* had a negative correlation (-.22) with Factor II: *Smartness Preference* and a negative correlation (-.28) with Factor III: *Smartness Self-Concept.* Those with relatively high scores on Factor I tended to have relatively low scores on Factors II and III. Factor II: *Smartness Preference* had a near zero correlation (-.02) with Factor III: *Smartness Self-Concept.* suggesting no relationship between these two factors. Generally, a factor correlation of less than .30 suggests a small factor overlap. All three factors correlated less than .30 suggesting that there was minimal overlap of the factors.

MANOVA AND ANOVA ANALYSES

In Appendix C the means and standard deviations are summarized by grade, gender and ability for each of the three subscales. In the analyses to be discussed only means relevant to significant differences will be used.

There were three independent variables (gender, ability, and grade level), and there were three dependent variables (Subscale I: *Smartness Self-Esteem,* Subscale II: *Smartness Preference,* and Subscale III: *Smartness Self-Concept*).

The first major expectation assumed differential changes of ability by grade level. This implied significant ($p<.05$) interactions between ability and grade level.. A second major expectation assumed differential changes of gender by grade level. This implied significant ($p<.05$) interaction between gender and grade level. The third major expectation implied differences between those identified as gifted and those students not identified as gifted independent of grade level and independent of gender. This implied no significant ($p>.05$) interaction.

The first step in the analyses was, then, to establish a three-way ANOVA for each of the three dependent variables. These ANOVAs were specified as full model ANOVAs so that they included all differential effects interaction terms. Then these three-way ANOVAs were tested collectively using MANOVA. The objective of the MANOVA is to provide a omnibus test of the ANOVAs. It was important to do this because data from the same people were being analyzed more than once, and the use of MANOVA reduced the probability of Type I errors.

MANOVA Analyses and Results

The MANOVA for the interaction of grade level and ability defined a non-significant ($p>.05$) Wilks' Lambda of .98 ($F(21.0, 1910.1) =.70$, $p >.05$, $p=.83$). This indicated that there were no differential effects for grade level by ability. Thus, the first general expectation was refuted.

MANOVA Interactions

Interest at this point centered specifically on the interaction terms. The interaction for grade and gender defined a non-significant ($p>.05$) Wilks' Lambda of .97 (F(21.0,

1910.1) =.88, p>.05, p=.61). This indicates that there were no differential grade level effects by gender for any of the three dependent variables. Thus, the second general expectation was refuted. The MANOVA for the interaction of gender and ability defined a non-significant (p>.05) Wilks' Lambda of .99 (F(3.0, 665.0) =.49, p>.05, p=.69). This indicates that there are no differential effects for gender by ability. The MANOVA, for the three-way interaction between grade, gender, and ability defined a non-significant (p>.05) Wilks' Lambda of .98 (F(21.0, 1910.1) =.68, p>.05, p=.86). This indicates that there are no higher order interactions.

The lack of significant (p<.05) interaction has important implications for the analyses to follow. The general expectations assumed there would be differential effects especially by grade level. Since there are no differential effects for any of the independent variables, the general expectations that portrayed differential scores by grade level must necessarily be modified, and the third general expectation that assumed no significant (p>.05) interaction was not refuted by these MANOVA results.

MANOVA Main Effects

The MANOVA for grade level defined a significant (p<.05) Wilks' Lambda of .95 (F(21.0, 1910.1) =1.72, p<.05, p=.02). This significant (p<.05) effect means that there are significant (p<.05) differences between grade level on one of the three dependent variables. The MANOVA for gender defined a significant (p<.05) Wilks' Lambda of .95 (F(3.0, 665.0) =11.04, p<.05, p=.01). This implies that there was a significant (p<.05) gender effect on one of the three dependent variables. The MANOVA for the identified gifted grouping defined a significant (p<.05) Wilks' Lambda of .95 (F(3.0, 665.0) - 11.29, p<.05, p=.01. This implies that there was an ability effect on one of the three dependent variables. The main effects for MANOVA must be tested with ANOVA.

ANOVA Analyses and Results

To determine the source of these MANOVA effects, three-way ANOVAs were carried out on the three dependent variables. However, the interaction effects were removed from the analysis model since they accounted for no significant ($p>.05$) variation.

ANOVA Main Effects Associated With *Smartness Self-Esteem*

The ANOVA for Subscale I: *Smartness Self-Esteem* defined a significant ($p<.05$) grade level effect ($F(7, 689) = 2.58$, $p<.05$, $p=.01$). This effect indicated that there are significant ($p<.05$) differences between grade levels. The means and standard deviations for Subscale I: *Smartness Self-Esteem* are reported by grade, gender and identified gifted versus the traditional students in Appendix C. Generally the mean for Subscale I is 7.

Post hoc comparisons using a Fisher PLSD were carried out on all pair-wise comparisons of the grade level means. This analysis indicates that the fifth grade mean on Subscale I: *Smartness Self-Esteem* was significantly ($p<.05$) higher than all other means except the seventh grade. This occurs regardless of gender and identified gifted ability.

The main effect for gender on Subscale I: *Smartness Self-Esteem* was not significant ($F(1, 689) = .03$, $p>.05$, $p=.87$). Therefore, it may be concluded that there are no significant ($p>.05$) effects for gender on Subscale I: *Smartness Self-Esteem* . The means for gender can be assumed to be similar except for chance differences.

The main effect for ability on Subscale I :*Smartness Self-Esteem* was significant ($F(1, 689) = 19.41$, $p<.05$, $p=.01$). Looking at the means reported in Appendix C, those children identified as gifted were significantly ($p<.05$) higher than those students noti identified as gifted. The fact that there was no significant ($p>.05$) interaction associated with ANOVA suggests that those identified as gifted will have means significantly ($p<.05$)

higher than those students not identified as gifted on Subscale I at every grade level. This occurs regardless of gender.

ANOVA Main Effects Associated With *Smartness Preference*

The ANOVA for Subscale II: *Smartness Preference* defined a significant ($p<.05$) grade level effect ($F(7, 689) = 2.95$, $p<.05$, $p=.01$). This effect indicates that there are significant ($p<.05$) differences between grade levels. The grade levels scores and standard deviations for Subscale II *Smartness Preference* are reported by grade, gender and ability in Appendix C. Post Hoc comparisons using a Fisher PLSD were carried out on all pair-wise comparisons of grade level means. This analysis indicated that the fifth grade mean was significantly ($p<.05$) lower than all other grade level means except eighth and tenth grades. The ninth grade mean was significantly ($p<.05$) higher than the fifth, seventh, eighth, and tenth grade means on Subscale II: *Smartness Preference*. This effect occurs regardless of gender and ability.

The main effect for gender on Subscale II: *Smartness Preference* was significant ($F(1, 689) = 41.50$, $p<.05$, $p=.01$). This effect indicates that there are significant ($p<.05$) differences between gender on this subscale with the males reporting relatively higher scores than females. The fact that there was no significant ($p>.05$) interaction associated with ANOVA suggests that the males will have higher means than females regardless of grade and regardless of ability.

The main effect on Subscale II: *Smartness Preference* for identified gifted ability versus the traditional students was not significant ($F(1, 689) = .13$, $p>.05$, $p=.72$). Therefore, it may be concluded that there are no significant ($p>.05$) effects for identified gifted versus those students not identified as gifted on Subscale II: *Smartness Preference* . The means for the identified gifted versus those students not identified as gifted can be assumed to be similar except for chance differences. The general overall mean for this Subscale is 4.27.

ANOVA Main Effects Associated With *Smartness Self-Concept*

The ANOVA for Subscale III: *Smartness Self-Concept* defined a non-significant grade level effect ($F(7, 689) = 1.43$, $p > .05$, $p = .19$). Therefore, it may be concluded that there are no significant ($p > .05$) effects for grade level on Subscale III. The grade level means can be assumed to be similar except for chance differences.

The ANOVA for Subscale III: *Smartness Self-Concept* defined a significant ($p < .05$) gender effect ($F(1, 689) = 10.06$, $p < .05$, $p = .01$). This effect indicates that there are significant ($p < .05$) differences between genders. The means and standard deviations for Subscale III *Smartness Self-Concept* are reported by grade, gender and ability in Appendix C. The means for the females were significantly ($p < .05$) higher than the males on Subscale III suggesting the females have greater concern about "smartness" than do males. The fact that there was no significant ($p > .05$) interaction associated with ANOVA suggests that females will have greater concerns about "smartness" than do males regardless of grade level and regardless of ability.

The ANOVA for Subscale III *Smartness Self-Concept* defined a significant ($p < .05$) identified gifted versus those students not identified as gifted effect ($F(1, 689) = 29.51$, $p < .05$, $p = .01$). This effect indicates that there are significant ($p < .05$) differences between those identified gifted and the traditional students on Subscale III: *Smartness Self-Concept* . An examination of the means suggests that those students not identified as gifted have significantly ($p < .05$) greater concern about "smartness" than do those identified as gifted. The fact that there was no significant ($p > .05$) interaction associated with ANOVA suggests that those students not identified as gifted have significantly ($p < .05$) greater concern about "smartness" regardless of grade level and regardless of gender.

ANOVA and MANOVA were used to analyze the means for differences by grade level, gender, and gifted ability on the dependent variables of Factors I, II, and III. Table I in the Apprendix D gives the means and standard deviations by grade, gender and ability for Factors I, II, and III.

MANOVA determined that there were no significant ($p < .05$) multivariate interactions and hence, no significant univariate interactions between the three independent variables of gender, grade, and gifted ability on the three dependent variables.

ANOVAs found significance ($p<.05$) for grade level and gifted ability on Factor I: *Smartness Self-Esteem.* Factor I:*Smartness Self Esteem* discriminated between grade levels, and students identified as gifted versus students not identified as gifted, although all students reported an average response in the positive range. Fifth graders and the identified gifted students expressed significantly ($p<.05$) greater confidence that they were smart than did other student groupings by grade level, and those students not identifed as gifted. The average score on this factor was 7.08 with a standard deviation of 1.59.

ANOVAs found significance ($p<.05$) and discriminated between grade level and gender on Factor II: *Smartness Preference.* The males (mean = 4.70) in the study more strongly preferred athletics/popularity to intelligence than did the females (mean =3.84). This can be generalized over the independent variables of gifted ability and grade level due to the lack of significant interaction effects.

Ninth graders had a significantly ($p<.05$) greater preference for athletics/popularity than did the fifth, seventh, eighth, and tenth graders. Fifth graders had a significantly ($p<.05$) lower preference for athletics/popularity to intelligence than did all other grade levels except eighth and tenth. This can be generalized over the independent variables of gender and giftedness due to the lack of significant interaction effects. The average score on this factor was 4 .27 with a standard deviation of 1.82.

ANOVAs found significance ($p<.05$) and discriminated between gender and gifted ability on Factor III:*Smartness Self-Concept.* On Factor III, females had significantly ($p.<.05$) more concern than the males about their intellectual ability, while the identified gifted had significantly ($p<.05$) less concern than those students not identified as gifted. Generally, attitude toward intelligence was found to be extremely stable in fifth through twelfth grades.The average statement response on this scale was 5.68 with a standard deviation of 1.89.

ANOVAs found significance ($p<.05$) and discriminated between grade levels on Factor I:*Smartness Self Esteem* and on Factor II: *Smartness Preference.*, but not on Factor III: *Smartness Self Concept.* Fifth graders expressed significantly ($p<.05$) greater confidence that they were smart than did other student groupings by grade level with an average score on Factor I being 7.08 with a standard deviation of 1.59. On Factor II:*Smartness Preference* ninth graders had a significantly ($p<.05$) greater preference for athletics/popularity than did the fifth, seventh, eighth, and tenth graders. Fifth graders had a significantly ($p<.05$) lower preference for athletics/popularity to intelligence than did all other grade levels except eighth and tenth. This can be generalized over the independent variables of gender and giftedness due to the lack of significant interaction effects. The

average score on this factor was 4 .27 with a standard deviation of 1.82. Generally, attitude toward intelligence was found to be extremely stable in fifth through twelfth grades..

ANOVAs found significance ($p<.05$) and discriminated between gender on Factor II: *Smartness Preference* and Factor III: *Smartness Self Concept.* On Factor II: *Smartness Preferebce* the males (mean = 4.70) in the study more strongly preferred athletics/popularity to intelligence than did the females (mean =3.84). This can be generalized over the independent variables of gifted ability and grade level due to the lack of significant interaction effects. On Factor III:*Smartness Self-Concept* females had significantly ($p.<.05$) more concern than the males about their intellectual ability.

ANOVAs found significance ($p<.05$) and discriminated between those students identified as gifted and those students not identified as gifted on Factor I:*Smartness Self Esteem* and Factor III:*Smartness Self Concept.* Although all students reported an average response in the positive range on Factor I: *Smartness Self Esteem*, the identified gifted students expressed significantly ($p<.05$) greater confidence that they were smart than did those students not identifed as gifted. The average score on this factor was 7.08 with a standard deviation of 1.59. On Factor III:*Smartness Self Concept* the identified gifted had significantly ($p<.05$) less concern than those students not identified as gifted. Generally, attitude toward intelligence was found to be extremely stable in fifth through twelfth grades.The average statement response on this scale was 5.68 with a standard deviation of 1.89.

Educational Importance

This study is important to education because it presents an instrument developed to measure adolescent attitude toward intelligent behavior in school. The factor analysis suggests that within the adolescent world there are at least three distinct attitudes toward intelligence: Smartness Self-Esteem, Smartness Preference, and Smartness Self-Concept. These attitudes must be taken into account by the adults who are involved in their educational progress because they affect how the students perceive their own abilities as well as suggest that displaying these abilities may carry social penalties within the adolescent world. If Festinger (1954) is correct in suggesting that individuals are very influenced by the attitudes of their social comparison groups, then attitudes such as "I am smart," "I prefer athletics or popularity to being smart," or "I am concerned about being smart" will have direct repercussions on how adolescents interact in the classroom.

The grade level differences on Factor I: *Smartness Self-Esteem* suggest that as students mature, they become more aware of how much there is to learn. However,

students of all grade, gender, and ability levels were in the positive range on *Smartness Self-Esteem* which is very reassuring. This suggests that perhaps it is time to move beyond concern for the self-esteem of children to include more challenging curriculum for all students. The identified gifted differences suggest that participation in gifted programs make them more confident of their abilities. Educators may use the above to help students develop realistic perceptions of those abilities. This research suggests that because attitude toward intelligence is formed and remains stable as early as fifth grade, elementary gifted programs may be important to the development of the gifted students' sense of intellectual self-esteem and self-concept. It also suggests that one factor possibly contributing to this stability of attitude in the identified gifted may be continuous programming, not only in the elementary but also throughout the junior high and high school years as well. Such programming could potentially preserve the gifted self-esteem and self-concept at a time when pejorative terms such as "brainiac" and "nerd" are applied to them, and when it is two or three times more acceptable to be labeled "partyer" or "druggie" than "brain" (Schroeder-Davis, 1996).

The gender and grade level differences on Factor II suggest that males and ninth graders have a stronger preference for athletics/popularity to intelligence. Educators could use this knowledge of these groups to structure education to address the issue of athletics/popularity and its relative importance in education and life. Udvari and Rubin (1996) confirm a concept underlying the structure of Factor II: *Smartness Preference*, i.e. that athletics and popularity are in opposition to intelligence. Academic effort, according to Udvari and Rubin (1996) was not viewed by any student as leading to social acceptance. Athletic characters were perceived to be more sociable and physically attractive as opposed to the perceived rejection of the non-athletic character. As students in that study matured, athleticism was more strongly perceived as a factor in social acceptability. Udvari's and Rubin's (1996) study further concludes that "brilliance" is more valued at the elementary level while athleticism is more valued by adolescents. The present research confirms all of these conclusion. The factors for this study were developed by having students fill out statements on pilot instruments. Consistently, athletic statements and popularity statements as opposed to intelligence were associated on a single factor. Clearly students perceived athletics and popularity as in opposition to intelligence.

In the research of Stephen Schroeder-Davis (1996) respondents who preferred most athletic over most intelligent were more than four times as likely to advance or acknowledge anti-intellectual themes, suggesting an extremely strong anti-intellectual force within the United States educational system. Howley, Howley, & Pendarvis (1995) feel that this anti-intellectual attitude is not limited to the students, but also typifies teachers who read an

average of only three books a year. In fact, according to Howley, Howley & Pendarvis (1995) many teachers go into the educational field not for the love of learning, but for the love of coaching.

It is not surprising then that athletics seem to be in opposition to intelligence, according to the students' responses to the statements which created Factor II: *Smartness Preference* or "I prefer athletics/popularity to being smart." This supports the anti-intellectualism charge which has been leveled at our schools (Howley, Howley, & Pendarvis, 1995). In his book, *Anti-intellectualism in American Life,* Hofstadter (1966) provided a footnote as to what he believed was the source of this lack of value for the intellect in the United States educational system. He asserts that because athletic skill is transient, special, and relatively unimportant in the tasks of life, large rewards and reverence are given to the athlete who entertains and can only do so for a relatively brief moment out of the human life-span. Intellect, however, is usually not considered entertaining, nor is it considered as 'innocent' since it is acknowledged that it is both important and a permanent advantage in life. Howley, Howley, & Pendarvis (1995) also suggest that the intellect is 'dangerous' and something to be feared because if people are forced to really think things through, uncomfortable results often occur. Athletics, on one hand, provide quick, easy, safe, observable and predictable appeals to the positive emotions while intellect provides permanent, tough, threatening, unobservable, and highly unpredictable appeals to the less comfortable emotions such as fear. This may well be why being intelligent brings with it the labeling of pejorative terms (Schroeder-Davis, 1996) and why athletics brings popularity. Schroeder-Davis (1996) believes the source of anti-intellectualism lies not in fear but in envy. Whatever the source, anti-intellectualism in the American educational system inhibits the "stewardship of the intellect" which should be the primary purpose of education (Howley, Howley, & Pendarvis, 1996).

The gender and identified gifted differences on Factor III suggest that females are an at-risk group in relation to concerns about their intellectual ability while those identified as gifted who participate in gifted programs had significantly less concern. . Students not identified as gifted need an opportunity to develop their critical thinking abilities as well as the identified gifted do. Critical thinking using the elements of reason (Paul, 1992) must be applied and expected in all aspects of the curriculum so that students not identified as gifted can develop greater confidence in their thinking and worry less about how others are appraising their intellectual abilities. Educators could use critical thinking as a means of remediation to address the concerns of females and those students not identified as gifted.

. Overall, educators need to be aware that the attitude toward intelligence is relatively stable in grades five through twelve which suggests that this attitude may be

formed in the early elementary years. This lends support for the importance of elementary gifted programs to provide a buffer for the pro-athletic, anti-intellectual atmosphere which is so evident during the adolescent years.

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APPENDIX A

Rationale for Instrument Statements

1. I think I will be successful because I am smart.

5. I often feel others are smarter than I am.

6. I am smart.

10. Sometimes I feel frustrated because I wish I were smarter.

12. I enjoy using my thinking ability.

15. I feel inferior to others about how smart I am.

19. I am confident of my thinking ability.

25. I often wish I were smarter.

27. I am very concerned about what others think of my thinking ability.

28. I often feel I am not as smart as my friend.

The above items are based upon those used in a self-esteem study conducted by Domino & Blumberg, 1986. Intelligence is one component of self-esteem but according to Domino and Blumberg the cognitive and the physical are not well-represented in the measure. The above statements are an attempt to deal with the cognitive domain of the self-esteem concepts. The following are the original statements as reported by Domino and Blumberg:

1. I usually feel inferior to others.

2. I normally feel warm and happy toward myself.

3. I often feel inadequate to handle new situations.

4. I usually feel warm and friendly toward all I contact.

5. I habitually condemn myself for my mistakes and my shortcomings.

6. I am free of shame, blame, guilt and remorse.

7. I have a driving need to prove my worth and excellence.

8. I have a great enjoyment and zest for living.

9. I am much concerned about what others think and say of me.

10. I can let others be "wrong" without attempting to correct them.

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2. My parents feel good about my thinking ability.

According to Kathryn Keirouz (1990) the relationship between parent and child can be positively and negatively affected by the child's measured intelligence.

3. Schools put too much emphasis on smartness.

4. My friends would rather be popular than smart.

16. Teachers think I am smart.

Maltby (1985) found that students' perceptions of their academic abilities are more closely aligned with that of their peers than that of their teachers'. Their peers attitude toward intelligence is a major consideration for many students The social as well as the emotional is another important domain for self-concept and self-esteem.

7. I do things so others will know how smart I am.

Coleman & Cross (1988) state gifted children may use high visibility strategies such as bragging to cope with stressful peer interaction (p.45)

8. My friends are smart.

21. I enjoy being with smart people.

Gifted children tend to seek intellectual peers (Webb, Mechstroth, & Tolan,1982 p.146).

9. I would rather be thought of as popular than smart.

13. Being popular will get me farther in life than being smart.

14. I would rather be thought of as a good athlete than smart.

18. I am more concerned about my athletic ability than my thinking ability.

20. It is harder to be a good athlete than it is to be smart.

26. I enjoy being with athletes more than being with smart people.

Whitfield, Cort, Fallone, and Baluch (1993) found that of those surveyed, 24% of women wished to be remembered as "brilliant," 70% as most popular, 6% as athletic. This study was conducted using British non-university adults.

11. People who are smart never have to work hard in school.

22. I could be smart if I tried harder.

Statement 11 is a based upon gifted students' interviews in which they described themselves and others perceptions. These perceptions imply that smartness and effort are related. (Coleman & Cross, 1988 , p. 49).

17. Sometimes my smartness makes me feel isolated from others my age.

According to Coleman and Cross (1988) gifted students learn that others can treat them differently and, therefore, perceive intelligence as a social handicap.

23. Smart people are treated differently.

Coleman & Cross (1988) state that gifted students learn that people treat them differently when they learn they are gifted (p.42).

24. Sometimes I try to hide how smart I am from others.

Coleman & Cross (1988) state gifted children may use low visibility strategies to camouflage their competence.

29. Smart people are usually made fun of.

Cross, Coleman & Yonkers (1991) listed as a coping strategy the statement that gifted children will often make fun of other gifted children in order to be disidentified as gifted.

30. I try very hard to make good use of my smartness.

A common complaint of parents of gifted children is that they don't make full use of their talents (Webb, Meckstroth & Tolan, 1982, p.80).

APPENDIX B

Factors loadings for all statements on all three factors-oblique reference structure solution

Statement #	Factor I	Factor II	Factor III
1	.74	.11	-.01
2	.68	.08	.00
3	-.12	.21	.34
4	-.02	.47	.11
5	-.18	.01	.58
6	.76	.11	-.15
7	.53	.02	.29
8	.48	-.00	.23
9	-.03	.66	.11
10	-.14	-.03	.67
11	-.20	.26	.22
12	.65	-.16	.12
13	-.07	.46	.08
14	.05	.79	.07
15	.03	.11	.59
16	.71	.10	-.04
17	.22	.10	.38
18	.07	.80	.04
19	.71	.01	-.08
20	.13	.47	-.0
21	.49	-.14	.28
22	.18	.03	.43
23	.08	.25	.28
24	.17	.16	.31
25	.14	-.06	.72
26	.00	.72	-.02
27	.26	.02	.56
28	-.07	-.00	.66
29	-.02	.78	.01
30	.47	-.18	.23

APPENDIX C

Statements associated with each variable

Variable #	Statement Associated
1.	I think I will be successful because I am smart.
2.	My parents feel good about my thinking ability.
3.	Schools put too much importance on smartness.
4.	My friends would rather be popular than smart.
5.	I often feel others are smarter than I am.
6.	I am smart.
7.	I do things so others will know how smart I am.
8.	My friends are smart.
9.	I would rather be thought of as popular than smart.
10.	Sometimes I feel frustrated because I wish I were smarter.
11.	People who are smart never have to work hard in school
12.	I enjoy using my thinking ability.
13.	Being popular will get me farther in life than being smart.
14.	I would rather be thought of as a good athlete than smart.
15.	I feel inferior to others about how smart I am.
16.	Teachers think I am smart.
17.	Sometimes my smartness makes me feel isolated from others my age.
18.	I am more concerned about my athletic ability than my thinking ability.
19.	I am confident of my thinking ability.
20.	It is harder to be a good athlete than it is to be smart.
21.	I enjoy being with smart people.
22.	I could be smart if I tried harder.
23.	Smart people are treated differently.
24.	Sometimes I try to hide how smart I am from others.
25.	I often wish I was smarter.
26.	I enjoy being with athletes more than being with smart people.
27.	I am very concerned about what others think of my thinking ability.
28.	I often feel I am not as smart as my friends.
29.	I would rather develop my athletic ability than my thinking ability.
30.	I try very hard to make good use of my smartness.

APPENDIX D

Factor I: Smartness *Self-Esteem* Means and Standard Deviations by Grade, Gender, and Ability

Grade	Identified Gifted			Traditional Students			TOTAL
	M	F	Total	M	F	Total	GRADE
	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
5TH	9.03/1.32	8.50/.53	8.81/1.06	7.46/1.46	7.38/1.61	7.41/1.53	7.55/1.55
6TH	7.58/1.35	7.50/.00	7.57/1.23	7.05/1.75	6.84/1.37	6.96/1.60	7.0/1.58
7TH	7.46/1.55	8.35/1.02	7.93/1.33	6.67/1.77	7.49/1.39	7.09/1.64	7.21/1.62
8TH	7.85/1.16	7.03/.45	7.63/1.06	6.63/2.18	6.91/1.84	6.77/2.01	6.86/1.95
9TH	7.76/1/24	7.95/.129	7.84/.88	7.26/1.01	6.55/1.68	6.90/1.42	7.03/1.39
10TH	7.63/.90	7.53/1.44	7.57/1.22	6.87/1.17	6.72/1.64	6.78/1.45	6.89/1.43
11TH	7.78/.48	7.54/1.23	7.63/.98	7.05/1.49	6.50/1.43	6.75/1.47	6.92/1.43
12TH	7.43/1.00	6.12/2.14	6.61/1.84	6.82/1.47	7.09/1.20	6.94/1.35	6.89/1.41

Factor II: *Smartness Preference* Meansand Standard Deviations by Grade, Gender, and Ability

Grade	Identified Gifted			Traditional Students			TOTAL
	M	F	Total	M	F	Total	GRADE
	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
5TH	3.20/1.64	3.63/.83	3.38/1.33	4.07/1.75	3.53/1.45	3.79/1.62	3.75/1.6
6TH	4.21/1.42	2.38/0.0	3.95/1.47	4.41/1.64	4.52/1.82	4.46/1.71	4.42/1.7
7TH	4.64/2.10	3.77/1.70	4.18/1.88	4.69/2.00	3.96/1.58	4.32/1.83	4.3/1.83
8TH	5.19/1.71	3.71/1.34	4.78/1.7	4.80/1.87	3.39/1.55	4.12/1.85	4.19/1.84
9TH	6.33/1.50	5.5/1.65	5.96/1.53	5.19/1.57	4.31/1.79	4.74/1.73	4.91/1.74
10TH	5.00/1.47	2.54/1.51	3.36/1.86	4.8/2.07	4.11/1.58	4.41/1.82	4.27/1.85
11TH	5.08/1.90	3.42/1.85	4.06/1.98	5.03/2.26	3.87/1.35	4.41/1.90	4.34/1.91
12TH	5.46/1.65	4.25/2.85	4.7/2.41	5.45/2.27	3.07/1.27	4.38/2.22	4.43/2.23

Factor III: Smartness Self-Concept Means and Standard Deviations by Grade, Gender, and Ability

Grade	Identified Gifted			Traditional Students			TOTAL
	M	F	Total	M	F	Total	GRADE
	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
5TH	4.31/2.33	5.94/2.36	(.99/2.39	5.81/1.74	6.20/1.97	6.01/1.86	5.91/1.93
6TH	5.67/2.00	4.00/0.00	5.43/1.93	5.91/1.90	6.15/2.12	6.01/2.01	5.97/2.00
7TH	4.37/2.14	4.23/1.26	4.30/1.66	5.15/1.73	6.27/1.69	5.72/1.79	5.51/1.83
8TH	3.11/1.47	5.43/1.00	3.74/1.70	5.73/2.07	6.18/1.87	5.94/1.98	5.70/2.06
9TH	3.71/2.14	5.46/1.90	4.49/2.12	5.07/1.66	5.45/1.64	5.26/1.65	5.15/1.72
10TH	4.29/1.86	5.07/1.97	4.80/1.86	5.85/2.05	5.50/1.67	5.65/1.83	5.54/1.85
11TH	4.31/1.58	5.40/2.55	4.98/2.22	5.52/1.84	5.86/1.55	5.7/1.68	5.56/1.80
12TH	4.33/.54	4.29/1.98	4.30/1.52	5.91/1.58	6.06/1.61	5.97/1.58	5.74/1.66